

Chapter

13

Angles in

Rectilinear Figures

Name : _____ ()

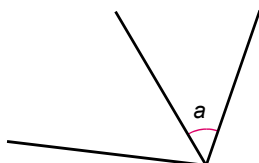
Class : _____ Date : _____

Marks / Grade : _____

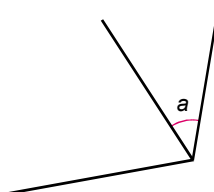
Worksheet 13A

1. According to each of the following conditions, mark angle b in the figure.

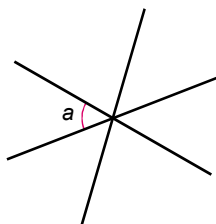
(a) a and b are angles at a point



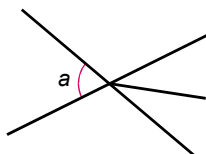
(b) a and b are adjacent angles



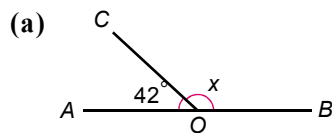
(c) a and b are vertically opposite angles



(d) a and b are vertically opposite angles



2. In each of the following figures, AOB is a straight line. Find x .

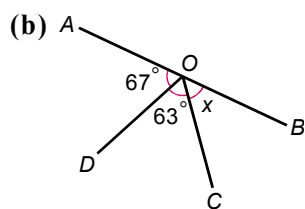


Solution

$$x + 42^\circ = \underline{\hspace{2cm}} \quad (\hspace{1cm})$$

$$x = \underline{\hspace{2cm}}$$

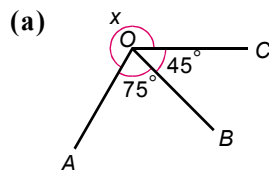
$$= \underline{\hspace{2cm}}$$



Solution

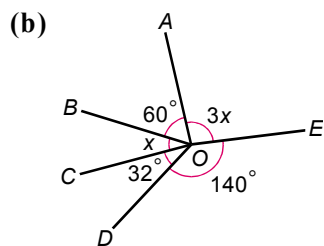
$$\begin{aligned} \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} &= \underline{\hspace{2cm}} \quad (\hspace{2cm}) \\ \underline{\hspace{2cm}} &= \underline{\hspace{2cm}} \\ x &= \underline{\hspace{2cm}} \\ &= \underline{\hspace{2cm}} \end{aligned}$$

3. Find x in each of the following figures.



Solution

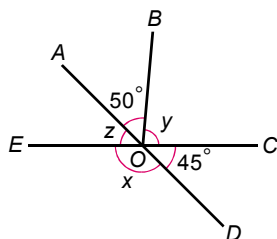
$$\begin{aligned} x + 75^\circ + 45^\circ &= \underline{\hspace{2cm}} \quad (\hspace{2cm}) \\ x + \underline{\hspace{2cm}} &= \underline{\hspace{2cm}} \\ x &= \underline{\hspace{2cm}} \\ &= \underline{\hspace{2cm}} \end{aligned}$$



Solution

$$\begin{aligned} \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} &= \underline{\hspace{2cm}} \quad (\hspace{2cm}) \\ &= \underline{\hspace{2cm}} \\ &= \underline{\hspace{2cm}} \\ x &= \underline{\hspace{2cm}} \end{aligned}$$

4. In the figure, AOD and EOC are straight lines.



(a) Find x .

Solution

$$\begin{aligned} x + 45^\circ &= \underline{\hspace{2cm}} \quad (\hspace{2cm}) \\ x &= \underline{\hspace{2cm}} \\ &= \underline{\hspace{2cm}} \end{aligned}$$

(b) Find y .

Solution

$$\begin{aligned}
 y + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} &= \underline{\hspace{2cm}} \quad (\hspace{2cm}) \\
 \underline{\hspace{4cm}} &= \underline{\hspace{4cm}} \\
 y &= \underline{\hspace{4cm}} \\
 &= \underline{\hspace{4cm}}
 \end{aligned}$$

(c) Find z .

Solution

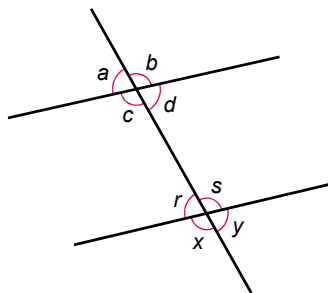
Worksheet 13B

Name : ()

Class : Date :

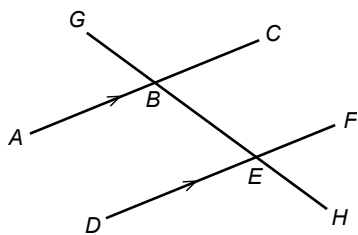
Marks / Grade :

1. Refer to the figure, match each pair of angles to the corresponding relation.



- | | |
|----------|------------------------------------|
| c, r • | • Corresponding angles |
| r, a • | |
| r, d • | |
| y, d • | • Alternate angles |
| s, c • | |
| d, s • | • Interior angles on the same side |

2. In the figure, ABC , DEF and $GBEH$ are straight lines, $AC \parallel DF$. Fill in the blanks with suitable reasons.



- | | |
|---|-----|
| (a) $\angle ABG + \angle CBG = 180^\circ$ | () |
| (b) $\angle CBE + \angle BEF = 180^\circ$ | () |
| (c) $\angle GBC = \angle BEF$ | () |
| (d) $\angle BED = \angle FEH$ | () |
| (e) $\angle ABE = \angle BEF$ | () |

3. In the figure, $ABCD$, EBF and GCH are straight lines, $EF \parallel GH$.

(a) Find p .

Solution

$$p + 52^\circ = \underline{\hspace{2cm}} \quad (\hspace{2cm})$$

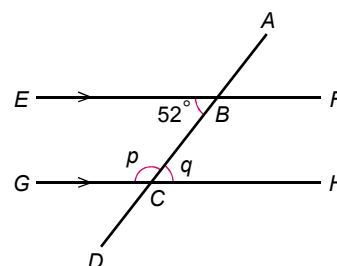
$$p = \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

(b) Find q .

Solution

$$q = \underline{\hspace{2cm}} \quad (\hspace{2cm})$$



4. In the figure, $AB \parallel CD$. Find x .

Solution

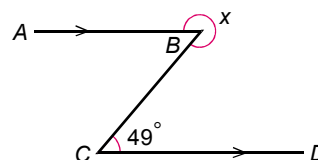
$$\angle ABC = 49^\circ \quad (\hspace{2cm})$$

$$\angle ABC + x = \underline{\hspace{2cm}} \quad (\hspace{2cm})$$

$$\underline{\hspace{2cm}} + x = \underline{\hspace{2cm}}$$

$$x = \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$



5. In the figure, ABC is a straight line, $AD \parallel BE$ and $AF \parallel BG$. Find x .

Solution

$$\angle DAB = \underline{\hspace{2cm}} \quad (\hspace{2cm})$$

$$\angle FAB = \underline{\hspace{2cm}} \quad (\hspace{2cm})$$

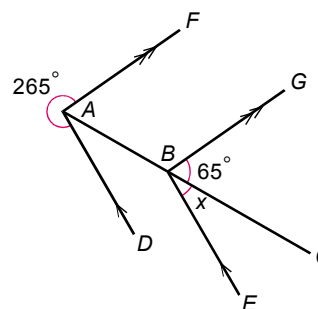
$$\angle DAB + \angle FAB + 265^\circ = \underline{\hspace{2cm}} \quad (\hspace{2cm})$$

$$\underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$x = \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$



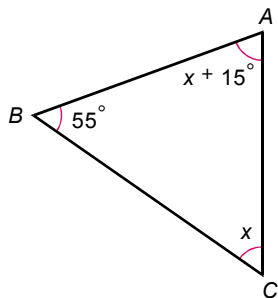
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Worksheet 13C

1. In the figure, find x .



Solution

$$x + x + 15^\circ + 55^\circ = \text{_____} (\quad)$$

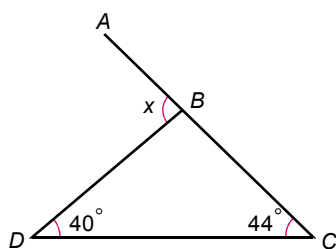
$$\text{_____} = \text{_____}$$

$$\text{_____} = \text{_____}$$

$$\text{_____} = \text{_____}$$

$$x = \text{_____}$$

2. In the figure, ABC is a straight line. Find x .

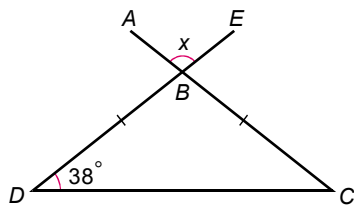


Solution

$$x = \text{_____} + \text{_____} (\quad)$$

$$= \text{_____}$$

3. In the figure, ABC and DBE are straight lines, $BC = BD$. Find x .



Solution

$$\angle CBD = x \text{ ()}$$

$$\angle BCD = 38^\circ \text{ ()}$$

$$\angle CBD + \angle BCD + \angle BDC = \text{_____} \text{ ()}$$

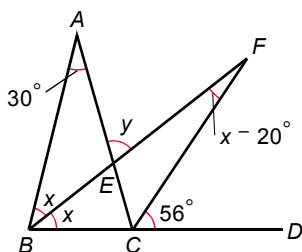
$$\text{_____} = \text{_____}$$

$$\text{_____} = \text{_____}$$

$$x = \text{_____}$$

$$= \text{_____}$$

4. In the figure, AEC , BCD and BEF are straight lines.



- (a) Find x .

Solution

In $\triangle BCF$,

$$x + x - 20^\circ = \text{_____} \text{ ()}$$

$$\text{_____} = \text{_____}$$

$$\text{_____} = \text{_____}$$

$$x = \text{_____}$$

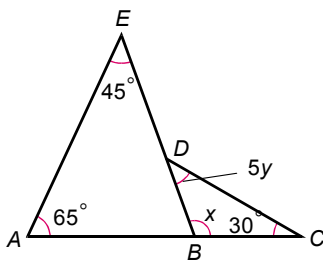
(b) Find y .

Solution

In $\triangle ABE$,

$$\begin{aligned} y &= \underline{\hspace{2cm}} + \underline{\hspace{2cm}} \quad (\\ &= \underline{\hspace{2cm}} + \underline{\hspace{2cm}} \\ &= \underline{\hspace{2cm}} \end{aligned}$$

5. In the figure, ABC and BDE are straight lines.



(a) Find x .

Solution

In $\triangle ABE$,

$$\begin{aligned} x &= \underline{\hspace{2cm}} + \underline{\hspace{2cm}} \quad (\\ &= \underline{\hspace{2cm}} \end{aligned}$$

(b) Find y .

Solution

In $\triangle BCD$,

$$x + 5y + 30^\circ = \underline{\hspace{2cm}} \quad (\hspace{1cm})$$

$$\underline{\hspace{2cm}} + 5y + 30^\circ = \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$y = \underline{\hspace{2cm}}$$

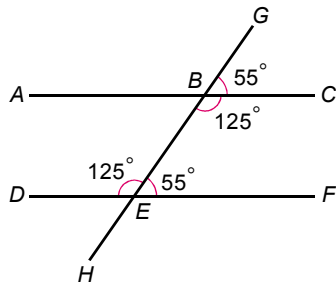
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Worksheet 13D

1. In the figure, ABC , DEF and $GBEH$ are straight lines. Fill in the blanks with suitable reasons.



(a) $\because \angle GBC = \angle BEF = 55^\circ$

$\therefore AC \parallel DF$ ()

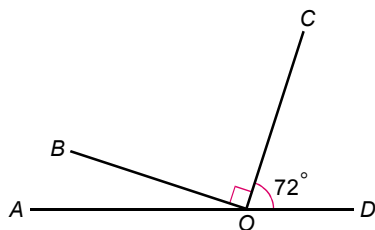
(b) $\because \angle CBE = \angle BED = 125^\circ$

$\therefore AC \parallel DF$ ()

(c) $\because \angle CBE + \angle BEF = 125^\circ + 55^\circ$
 $= 180^\circ$

$\therefore AC \parallel DF$ ()

2. In the figure, AOD is a straight line. Prove that $\angle BOA = \frac{1}{4} \angle COD$.



Proof

$\angle BOA + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ ()

$\angle BOA + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

$\angle BOA = \underline{\hspace{2cm}}$

$= \frac{1}{4} \times \underline{\hspace{2cm}}$

$= \frac{1}{4} \angle COD$

3. In the figure, $AB = AC$. Prove that BCD is a straight line.

Proof

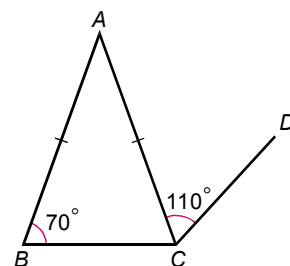
$$\therefore AB = AC \quad ()$$

$$\therefore \angle ACB = \quad ()$$

$$\therefore \angle ACB + \angle ACD = \quad + \quad$$

$$= \quad$$

$$\therefore BCD \text{ is a straight line. } ()$$



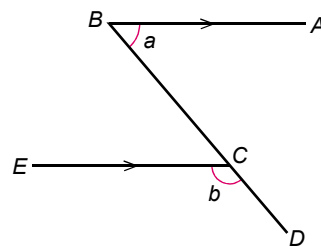
4. In the figure, $AB \parallel CE$, BCD is a straight line. Prove that $a + b = 180^\circ$.

Proof

$$\angle BCE = a \quad ()$$

$$\angle BCE + b = \quad ()$$

$$\therefore a + b = 180^\circ$$



5. In the figure, AOB , COD and EOF are straight lines, $AB \perp EF$. Prove that $a + b = c$.

Proof

$$\angle COF = b \quad ()$$

$$\therefore AB \perp EF \quad ()$$

$$\therefore \angle FOB = \angle FOA = \quad$$

$$\quad + \quad = \angle FOA$$

$$\therefore a + b = c$$

